

REMARKS

Claim 1 was previously pending. Claim 1 has been cancelled and new claim 2 has been added. New claim 2 is essentially claim 1 rewritten to more clearly define the claimed invention. No new matter has been added.

Claim 1 was originally rejected based on 35 U.S.C. § 103(a) over the combination of Applicants' admissions on JP 3-503334 in view of U.S. Patent No. 4,923,637 ("Yagi"). Claim 1 was also rejected based on 35 U.S.C. § 112, ¶ 2. Applicants will traverse both rejections as applied to new claim 2.

I. Claim 2 Is Definite

Claim 1 was rejected due to the repeated use of "in which", the number of fibers claimed, and the inconsistent fiber and substructure size. Each of these purported issues have been addressed in new claim 2.

As claim 2 recites, the instant invention is directed to a graphite material comprising an aggregate of intertwined carbon fibrils (*i.e.*, more than one fibril). The claimed aggregate have an average particle diameter between 0.1 to 100 µm, which is correctly larger than the individual fibrils (diameter between 0.0035 and 0.075 µm) which make up the aggregate. The characteristics of each of the individual fibrils are clearly recited in the claim. Thus, claim 2 is clear and definite.

As such, withdrawal of this rejection is respectfully requested.

II. Claim 2 Is Patentable Over JP 3-503334 And Yagi

The Examiner stated that it would have been obvious to "heat the fibers of '334 in the manner taught by Yagi to make the claimed product because doing so stabilizes the structure to make a conductive material desired by Yagi col. 1 lines 15-30." Office Action, p. 2. Applicants respectfully disagree since (a) there is no motivation to combine the asserted references, (b) there

is no reasonable expectation of success, and (c) the combination fails to teach all of the claimed limitations.

A. There Is No Motivation To Combine J-3-503334 and Yagi

It is well-established that before a conclusion of obviousness may be made based on a combination of references, there must have been a reason, suggestion, or motivation to lead one of ordinary skill in the art to combine those references. *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1617-18 (Fed.Cir. 1999)(“Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.”). Additionally, there also must be a reasonable expectation of success from the prior art in combining the references. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438, 1442 (Fed.Cir. 1991). This motivation to combine and the reasonable expectation of success both must be found in the prior art and not the Applicants’ disclosure. *In re Vaeck*, 20 U.S.P.Q.2d at 1442. Using the Applicant’s own disclosure in an obviousness analysis is considered improper and prohibited by case law. *Grain Processing Corp. v. American Maize-Products Co.*, 840 F.2d 902, 907, 5 USPQ2d 1788, 1792 (Fed. Cir. 1988)(“Care must be taken to avoid hindsight reconstruction by using the patent in suit as a guide through the maze of prior art references, combining the right references in the right way so as to achieve the result of the claims in suit.”); *In re Fine*, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988)(“One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.”)

Further, as stated by the Court in *In re Fritch*, 23 U.S.P.Q.2d 1780, 1783-1784 (Fed. Cir. 1992):

The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggests the desirability of the modification.

The references relied upon by the Examiner fail to provide the necessary incentive or motivation which would produce the invention as claimed. Namely, the Examiner attempts to rely on the Applicants' "admissions" in Applicants' specification concerning the teachings of J-3-503334 to combine it with Yagi. Office Action, p. 2.

At the outset, Applicants submit that it is improper to use Applicants' specification as a roadmap to combine with other references. *In re Vaeck*, 20 U.S.P.Q.2d 1438; *Grain Processing Corp*, 5 U.S.P.Q.2d at 1792; *In re Fine*, 5 U.S.P.Q.2d at 1600.

Furthermore, Applicants also submit that there is no motivation to combine J-3-503334 with Yagi to practice Applicants' claimed inventions because they are directed to completely different inventions.

J-3-503334 is directed to the formation of hollow carbon fibrils and fibril aggregates. These carbon fibrils comprise outer layers of ordered carbon atoms. As a result, these carbon fibrils do not contain any amorphous thermal carbon overcoat. Because they do not contain disordered carbon, these carbon fibrils are stable and unreactive.

On the other hand, Yagi is directed to the heat treatment of solid (*i.e.*, nonhollow) carbon fibers. Prior to being heat treated, these untreated carbon fibers have an amorphous thermal carbon overcoat deposited on the fiber core. The amorphous thermal carbon overcoat contains disordered carbon. As a result of the disordered carbon, the untreated carbon fiber is reactive. Thus, Yagi teaches to heat these untreated carbon fibers to very high temperatures (*i.e.*, 2000-3500°C) in order to transform the amorphous thermal carbon overcoat into a stable polycrystalline material, thereby increasing the order of the carbon fiber. (Col. 2, lines 48-51 - "Further, it is preferable to heat the obtained fiber at 2000° to 3500°C for 20 to 120 min. within

an inert gas to develop and stabilize the crystal structure of the carbon fiber before or after the above pulverization.”)(Col. 4, lines 16-19 – “to further enhance develop and stabilize the carbon hexagonal net plane arrangement parallel to fiber axis and the annual ring growth crystal arrangement around the fiber axis.”) In other words, there is present disordered carbon on the outer region of the carbon fiber and Yagi seeks to convert the disordered carbon into more ordered and stable crystalline structures.

Therefore, there is no motivation to further process the hollow, stable and ordered carbon fibrils of J-3-503334 with the heat treatment of Yagi which was meant to stabilize the unstable, reactive, disordered carbon atoms on solid carbon fibers.

As such, withdrawal of this rejection is respectfully requested.

B. There Is No Reasonable Expectation Of Success

Not only must there be a motivation to combine the asserted reference, but there must also be a reasonable expectation of success. MPEP § 2143.02. However, for the same reason that there is no motivation to combine J-3-503334 to Yagi, there is also no reasonable expectation of success. That is, one of ordinary skill in the art would not expect that heating the already unreactive, stable and ordered carbon fibrils of J-3-503334 using the process of Yagi (which was for treating disordered reactive carbon fibers) would successfully result in the improved fibrils claimed by Applicants.

C. Combining J-3-503334 With Yagi Will Not Produce Applicant's Claimed Invention

Even if there exist some motivation to combine or reasonable expectation of success, which Applicants assert there is not, all of the claim limitations must still be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974); In re Wilson, 424 F.2d 1382, 1385, 165 U.S.P.Q. 474, 496 (CCPA 1970). MPEP 2143.03.

That is, under the Examiner's proposed combination, the carbon fibrils of J-3-503334 are heated using the process disclosed in Yagi. Applicants respectfully submit that it is incorrect for the Examiner to simply assume that simply heating the fibrils of the '334 application in the manner taught by Yagi will yield the composition of Applicants' claim.

For example, Applicants teach that to obtain its claimed invention, one would take the specified fibrils

as the raw material and [by] heat[ing] it at 2000 to 3500°C, and most preferably, greater than 2450°C in a vacuum or in an inert gas atmosphere such as argon, helium or nitrogen either in unaltered form or after a chemical treatment such as removal of the catalyst carrier by treatment with an acid or alkali or adjustment to a specified particle diameter by pulverization treatment or after both have been performed. When carbon fibrils are subjected to heat treatment in unaltered form, the target substance can be obtained by performing chemical treatment and pulverization treatment after heating.

Specification, p. 5, line 29 - p. 6, line 4 (emphasis supplied). Thus, Applicants teach, inter alia, that chemical treatment to remove the catalyst carrier is one of the steps used to obtain the claimed graphite fibril material. However, Yagi does not teach or suggest anywhere the use of chemical treatment to remove the catalyst carrier. Instead, Yagi only teaches infiltration of reactive substances into the graphite crystal to form graphite intercalation compound in which the reactive substances are located between the carbon planes of the fibers. Col. 8, lines 25-33. Since the catalyst carrier is never removed in Yagi, it is improper to assume that simply using the heating technique in Yagi will yield the Applicant's claimed products.

Thus, Applicants respectfully submit that since there is no proof that simply heating the fibrils of J-3-503334 using the methods of Yagi will yield the Applicants' claimed products, J-3-503334 and Yagi combined still fail to teach each of the limitations of the Applicants' claims. Thus, Applicants respectfully request that this rejection under 35 U.S.C. § 103(a) be withdrawn.

* * * * *

Therefore, Applicants respectfully submit that new claim 2 is patentable over the asserted combination of J-3-503334 and Yagi.

If there are any additional fees, please credit any overpayment or charge any deficiencies to our firm deposit Account No. 50-0540.

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Respectfully submitted,

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